The Australian Market Perception Of Goodwill And Identifiable Intangibles

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Abstract

Accounting for goodwill and identifiable intangibles is one of the most controversial issues in financial reporting. Preliminary evidence suggests that the materiality of goodwill and identifiable intangible assets in corporate statements of financial position for a large number of firms is the reason for the considerable attention given to goodwill and identifiable intangibles. The present study analyses the Australian market perception of goodwill and identifiable intangibles in the determination of firm's market valuation. It also explores the market perception of assets goodwill and identifiable intangibles relative to other tangible assets. Evidence suggests that there is a strong positive association between reported goodwill and identifiable intangible asset values and equity market values, concluding that the market appears to perceive reported goodwill and identifiable intangibles as assets in the determination of firms' market valuation. Evidence also suggests that the highest coefficient value among the variables of the study model (the asset-based model) belong to reported asset goodwill and to a lesser extent, other net assets. Thus, it is concluded that, on average, the market perceives reported goodwill as having a higher weight than other financial position statement items in the asset-based model, whereas the market appears to discount reported identifiable intangible assets relative to other items in the model when valuing firms. Further, evidence suggests that there is a negative and inconsistently significant association between equity market values and write-offs of goodwill and identifiable intangibles, concluding that such associations may vary substantially across firms, thus, the use of standardised amortisation requirement may be appropriate.

Accounting for intangibles has been subjects of controversy in Australia and in many other countries (Grant, 1996). The central issue appears to be in the recognition of intangibles as assets. If intangibles are presumably recognised as assets, further controversy exists on the measurement of intangibles and the accounting treatment that best represent the resources and performance of the company. The Australian goodwill standard (AASB 1013/AAS 18) requires goodwill, comprising the future benefits from unidentifiable assets, to be recognised as an asset in the statement of financial position only when it has been purchased in a business acquisition. Goodwill is then to be amortised over its expected useful life, subject to a maximum of twenty years. However, there has been no specific accounting standard governing accounting for identifiable intangible assets in Australia. The issue is so contentious that in 1992 an exposure draft on identifiable intangible assets, ED 49 "Accounting for Identifiable Intangible Assets", was withdrawn three years after issue.

Goodwill and identifiable intangibles have been the subject of considerable attention by the Australian Accounting Standards Board (AASB). For instance, the AASB recently considered a paper titled "Strategy Paper: Intangible Assets" (AASB, 2000). This paper outlines the key issues to be addressed in a project to review accounting for intangible assets. The strategy calls for the issue of recognition and measurement for intangibles among other issues. In 1999, the Australian Accounting Research Foundation (AARF) issued Accounting Interpretation AI 1 "Amortisation of Identifiable Intangible Assets" that was prepared by the Public Sector Accounting Standards Board (PSASB) and the AASB. AI 1 outlines the Boards' view that identifiable intangible assets including brandnames, mastheads, licences and trademarks fall within the scope of Accounting Standards AASB 1021/AAS 4 "Depreciation of Non-Current Assets" and that in most instances such assets have depreciable amounts.

The Australian Securities and Investment Commission (ASIC) has also addressed goodwill and identifiable intangibles. The ASIC issued the Media Release (99/219), concerning the ASIC's view with respect to 1998 financial reports of 111 listed companies identified a number of instances where intangible assets, including tradenames, customer databases and licences, were not amortised (ASIC, 1999). The release reported that ASIC expects companies to amortise intangible assets in accordance with AASB 1021/AAS 4 and has already requested some companies to review and revise their approaches for their intangibles. In 1993, ASIC issued the Practice Note (PN 39) and indicated that the amortisation method of "inverted sum of the years digits" (ISOYD), only in rare cases, satisfies the requirements of AASB 1013. Moreover, the Full High Court of Australia included goodwill and identifiable intangibles in its legislation agenda. The recent decision of the Full High Court in the case of FC of T v Murry 98 ATC 4585 has made some important observations that relate to the issues of identifying and valuing goodwill. While there is now recognition that identifiable intangible assets, such as a tax license, do not give rise to goodwill, it needs to be recognised that such assets contribute to the generation of goodwill insofar as they add to the forces which attract customs (Nethercott, 1998).

The IASC, the UK Accounting Standards Board (ASB) and the US Financial Accounting Standards Board (FASB) have included goodwill and identifiable intangibles on their agendas. The issue of goodwill recognition is especially contentious in the US because the FASB recently issued Statement of Financial Accounting Standards (SFAS 142) "Goodwill and Other Intangible Assets", that eliminates amortisation of goodwill and establishes an accounting treatment to recognise goodwill impairment. The source of conflict is that the US tradition treatment of accounting for goodwill was to capitalise and amortise over a period not to exceed 40 years. The alleged advantages for the non-amortisation and impairment model to US firms have been the favourable earnings and the increase in earnings per share that result from avoiding future amortisation expenses (Schneider et al, 2001).

Based on the above discussion, it is apparent that goodwill and identifiable intangibles are important and pervasive issues for the accounting standard-setters and other interested parties. The considerable attention is attributable to the increased reporting and materiality of goodwill and identifiable intangible assets on corporate statements of financial position.

1. Goodwill And Identifiable Intangibles: Major Assets

A preliminary search of the Connect 4 database[1] over the period of four years, which starts from 1997 to 2000, reveals that almost half of the top 500 Australian companies clearly report intangibles. Intangibles are also material percentage[2] of total reported assets for many of these companies.

Table (1) presents summary statistics that show the number of companies, which recognised goodwill and/or identifiable intangibles in their financial statements for the four years period. It reveals that the number of material intangible companies has grown up to 199 companies in year 2000. This is a substantial increase on the 1997 figures of 103 companies reporting material intangibles. Simultaneously, the number of immaterial intangible companies, those companies with intangibles equal or less than 5% of the total reported assets, has dropped down to 85 companies in 2000. This is also a substantial decrease on the 1997 figures of 120 companies reporting immaterial intangibles.

The total reported intangible assets for those intangible companies are quite impressive over the year period. Intangible assets are reported in the aggregate amount of AU$44, 52, 54, and 59bn for 1997, 1998, 1999 and 2000 respectively. In the year-end 2000, fifty-eight companies reported intangibles exceeding AU$33bn. Table (2) shows selected examples of such companies, which include well-known companies such as Seven Network Ltd, John Fairfax Holdings Ltd, PMP Communications Ltd, and Spotless Group Ltd.

Goodwill and identifiable intangibles are a material percentage of total reported assets for many firms. AAS 5 requires disclosure of goodwill and identifiable intangibles by commercial and industrial firms if it exceeds 5% of total reported assets. For the year 2000, there are 199 of 284 companies (70%) reporting 'material' amounts of goodwill and identifiable intangibles. In some cases, goodwill and identifiable intangibles constituted a majority of a company's assets. Table (3) shows selected example of Australian companies with goodwill and identifiable intangibles in excess of 50% of total reported assets.

The preliminary search reveals as well that many companies show material identifiable intangibles such as brandnames, mastheads, licences and rights substantially larger than goodwill. Those identifiable intangible assets are not amortised, as there is no accounting standard that regulates identifiable intangibles. Therefore, the financial effect of such practice materially overstates the reported income of such companies. Table (4) shows some of these companies.

Based on the above preliminary results, it is evident that goodwill and identifiable intangible assets are material relative to total reported assets and prevalent on Australian corporate statements of financial position. It suggests that accounting for goodwill and identifiable intangibles is an important financial reporting issue, and its measurement rules need empirical investigations.

2. Literature Review

Accounting for goodwill and identifiable intangibles has been one of the most controversial issues in contemporary accounting. According to Davis (1992), it is argued that any arguments for investigations to goodwill and identifiable intangible accounting and disclosure practices must take into consideration how current capital market participants use intangible data. Some of the recent capital markets research that is of direct implications for this study design and hypotheses are reviewed below.

Chauvin and Hirschey (1994) examine the influence of accounting goodwill on both profitability and the market value of firms. Their sample includes 2,693 US firms, which reported goodwill for the period 1989 to 1991. They develop a model that includes goodwill and net income along with other variables as explanatory factors for the market value of the firm. They report that the association between firm market value and reported goodwill is positive and significant. They conclude that some information of use to investors is reflected by the reported goodwill on firms' statement of financial position.

McCarthy and Schneider (1995) analyse the market perception of goodwill as recognised by US GAAP in the determination of the firm's valuation. Their sample consists of all firms listed in the US and who reported goodwill in the years 1988 to 1992. They estimate a model that includes both statements of financial position and performance components to explain the market value of the firm. They find a positive and significant relationship between reported goodwill and firm market value. They also find that goodwill has coefficient values greater than those of other assets in all years under study. They overall conclude that goodwill appears to be perceived by the market as significant and the market values goodwill, at least, to the same degree as it values other assets.

Jennings, Robinson, Thompson and Duvall (1996) investigate whether goodwill asset and expense numbers are related to the market value of US firms for the period 1982 to 1988. To address the financial position statement issue, they estimate a model that relates market value of equity to components of accounting net assets, including net goodwill. To address the financial performance statement issue, they estimate a model that relates market value of equity to components of expected future earnings, including goodwill amortisation. In their balance sheet model they find a strong positive association between equity values and reported goodwill asset amounts. They find in their earnings capitalisation model a weak negative association between equity values and goodwill amortisation, suggesting that such association may vary substantially across firms.

Kealey (1996) examines whether acquired goodwill is perceived by investors as an asset when valuing firms post-acquisition. Her sample consists of US and UK listed firms that have made acquisitions from 1985 through 1990. She employs equity valuation models based on the statement of financial position identity that is first

used by Landsman (1986). She finds a positive and significant association between acquired goodwill and firms' market value for the first five years after acquisition. She concludes that even after amortisation over several years, the disclosed goodwill asset values reflect information of relevance to investors.

Aboody and Lev (1998) evaluate the value-relevance of software development costs which have been capitalised in accordance with the Financial Accounting Standards Board's Statement No. 86 (SFAS No. 86). They assess the ten-year record of software capitalisation in United States to test the validity of claims advanced by the Software Publishers Association (SPA) to abolish the capitalisation standard (SFAS No. 86) in March 1996. To address the capitalisation issue, they develop a model that relates market value of equity to components of accounting assets, including capitalised software. To address the amortisation issue, they estimate a model that relates firms' annual stock return to components of expected future earnings, including software amortisation. In their market-to-book value model they find a positive and significant association between capitalised software asset and market value of equity. They find in their earnings capitalisation model a negative and significant association between software amortisation and firms annual stock return. They conclude that the value of the software assets and its amortisation are value-relevant to capital market variables and future earnings.

Barth, Foster, Clement and Kasznik (1998) examine the value relevance of Financial World brand name values estimates by investigating the association between brand values and security prices and returns, incremental to other accounting variables. To address the stock price issue, they estimate a model that relates market value of equity to brand values estimates and net income, adjusted for one year change. Using 1,204 brand value estimates for 183 companies over the 1991 to 1996 period. They find in their stock price model a positive and significant association between brand name values estimates and stock prices. In their stock return model they find a positive and significant association between the change in brand values estimates and stock returns. They conclude that investors find Financial World brand name values estimates relevant and sufficiently reliable to be reflected in share market values in additional to the information from the annual reports.

Godfrey and Koh (2001) investigate whether capitalisation of research and development (R&D), other identifiable intangibles as a group (eg., patents, brandnames, mastheads, licences), and unidentifiable intangibles assets (goodwill) affects the market value of equity in Australian firms. Their sample is based on 172 firms with reported intangible assets for the year 1999. In order to evaluate the value-relevance of capitalised intangible assets, they initially develop a model that relates the market value of equity to the book value of capitalised tangible and intangible assets and liabilities. They then extend the scope of their initial model to allow for individual parameters for goodwill, R&D and other identifiable intangibles. In their initial model they find a strong positive association between total intangible assets and equity market values. In their extended model they find a strong positive association between reported goodwill and equity market values and goodwill coefficient has the largest value compared to other variables in the regression model. They also find a negative and insignificant association between R&D and firm market value. They conclude that not all types of capitalised intangible assets are value-relevant. The capitalisation of goodwill and identifiable intangible assets add value to firm valuation. The market places greater value on capitalised goodwill than on other financial position statement items. They also find that the capitalisation of R&D costs is not value-relevant to firms' valuation.

Despite the massive amount of research in accounting for goodwill and identifiable intangible assets, very little attention seems to be given to investigate the relation between the accounting treatment of goodwill and identifiable intangibles and market value of firms in Australia. Godfrey and Koh (2001) provide a snapshot of the value-relevance of capitalised goodwill and identifiable intangible assets for Australian firms in one year, 1999. They find that capitalisation of goodwill and identifiable intangible assets are value-relevant to valuation firms. However, no study has attempted to assess whether investors place value on the write-offs of goodwill and identifiable intangibles when valuing Australian firms. This situation needs further investigation in order to contribute to the current debate. Thus, the present study analyses the Australian market perception goodwill and identifiable intangibles in the determination of market valuation. It is the first attempt to examine whether amortisation of goodwill and identifiable intangibles is value-relevant to investors when valuing Australian firms. It is also the first attempt to investigate whether the market perceives the book assets identifiable intangibles similarly to all other tangible book assets.

3. Issues Of The Study

As found in the previous section, goodwill and identifiable intangibles are clearly shown on the statements of financial position of a large number of Australian companies. In some cases, goodwill and identifiable intangibles compromise a significant percentage of reported assets. The Australian Accounting Standards Board (AASB) is primarily concerned with providing financial statements with information position and performance of the company. Currently, the Financial Accounting Standards Board (FASB), the Accounting Standards Board (ASB), and AASB are deliberations concerning the recognition and measurement of goodwill and identifiable intangibles. The central issue in these deliberations is which accounting treatment for goodwill and identifiable intangibles results in the statements of financial position and performance that best represent the resources and performance of the firm.

Evidence that the market perceives the book assets goodwill and identifiable intangibles as economic resources when determining the value of a firm would provide some support for the proposition that goodwill and identifiable intangibles should be recognised as assets on the statement of financial position. On the other hand, if such evidence does not exist, then the best representation of the firm's resources may result from omitting goodwill and identifiable intangibles from the statement of financial position. If goodwill and identifiable intangibles are recognised as assets, then the issue arises is whether assets goodwill and identifiable intangibles are perceived by the market similarly to all other tangible assets in the valuation of a firm. Addressing this issue would provide insight into the relative importance of reported goodwill and identifiable intangibles in valuing a firm compared to all other tangible assets. Should goodwill and identifiable intangibles be found to be at least as important as other assets, then such results provide additional evidence for the recognition of goodwill and identifiable intangibles.

If goodwill and identifiable intangibles are capitalised, the issue with respect to the statement of financial performance is whether goodwill and identifiable intangibles decline in value over time or whether they maintain their values indefinitely. Evidence that the market perceives write-offs of goodwill and identifiable intangibles as wasting resources when determining the value of the firm would provide some support for the proposition that investors view goodwill and identifiable intangibles as assets that are expected to decline in value over time. On the other hand, if this evidence does not exist, the resources and performance of the firm may be represented better by allowing firms to capitalise goodwill and identifiable intangibles and to review their balances annually to determine whether they should be reduced in value.

The above discussion calls for the following three research questions:

1. Does the market perceive book assets goodwill and identifiable intangibles as economic resources when determining the market value of the firm? ;
2. Does the market value goodwill and identifiable intangibles similarly to all other tangible assets? and
3. Does the market perceive write-offs of goodwill and identifiable intangibles as wasting resources when valuing firms.

4. Research Design

The main objective of this study is to examine the market perception of goodwill and identifiable intangibles when firms are valued. One of the possibilities to achieve this objective is to examine the association between market value of equity and intangible numbers, asset goodwill and identifiable intangibles in terms of their book values and write-offs. Thus, the present study develops two models which are the asset-based model and the asset and income-based model. The asset-based model examines the association between market value of equity and book values of asset goodwill and identifiable intangibles. The asset and income-based model examines the association between market value of equity and write-offs of assets goodwill and identifiable intangibles. However, both models are presented and developed below.

4.1. Intangible Book Values and Equity Market Value

As mentioned earlier, a major purpose of the present study is to investigate whether the market perceives goodwill and identifiable intangibles, in relation to their book values, as economic resources when firms are valued. Further, it investigates whether the market perceives book assets goodwill and identifiable intangibles similar to other tangible assets. This focus leads to the asset-based model, which examines the association between market value of equity and book assets goodwill and identifiable intangibles. The development of the asset-based model involves three stages, which are presented and discussed in the three sub-sections below.

Goodwill and Equity Market Value

The first stage of the development of the asset-based model relates the market value of equity to book asset goodwill. Basically, the equity valuation model employed in this study is based on the basic accounting entity equation, which was firstly used in this context by Landsman (1986). Reasons behind the adoption of Landsman's model are; first, the statement of financial position identity helps to contrast parameter values of the elements of the model. Second, the market value of equity is the dependent variable in the present study. Under this approach, the market value of shareholder's equity (MVE) is given by:

$$MVE_{ft} = MVA_{ft} + MVL_{ft} \quad (1)$$

Where

MVA_{ft} = Market value of assets of firm f in year t.
MVL_{ft} = Market value of Liabilities of firm f in year t.

Aware of the theory that there is no optimal capital structure (Miller, 1977), Landsman (1986) developed the theoretically benchmark coefficients of MVA and MVL to be +1 and −1 respectively.

Major focus of the present study is to examine the market perception of the amount reported for goodwill. In similar studies, McCarthy and Schneider (1995), Jennings et al (1996), and Godfrey and Koh (2001) used the book values of assets and liabilities as proxies for market values since the market value of assets and liabilities are unobservable (McCarthy and Schneider, 1995). They also separate assets into assets, which exclude goodwill, BVAEGW, and goodwill, BGW. The expanded version of equation (1) becomes:

$$MVE_{ft} = \alpha_0 + \alpha_1 BVAEGW_{ft} + \alpha_2 BVL_{ft} + \alpha_3 BGW_{ft} + \varepsilon_{ft} \quad (2)$$

Identifiable Intangibles and Equity Market Value

The second stage of the development of the asset-based model relates the market value of equity to book asset identifiable intangibles. Another major focus of the present study is to examine the market perception of the amount reported for identifiable intangibles. To do so, a model is to be produced that incorporates into the right hand side of equation (1) book values instead of market values, and also separates assets into assets which exclude identifiable intangibles, BVAEID, and identifiable intangibles, BIDINT. The expanded version of equation (1) becomes:

$$MVE_{ft} = \beta_0 + \beta_1 BVAEID_{ft} + \beta_2 BVL_{ft} + \beta_3 BIDINT_{ft} + \varepsilon_{ft} \quad (3)$$

Goodwill and Identifiable Intangibles and Equity Market Value

The third stage relates the equity market value to book assets goodwill and identifiable intangibles. This is the final stage of the development of the asset-based model. It examines whether the market perceives book assets goodwill and identifiable intangibles as economic resources when firms are valued. It also examines whether the market perceives book assets goodwill and identifiable intangibles similar to other tangible assets. To do so, a model

is to be specified that incorporates into the right hand side of equation (1) book values instead of market values, and also separates assets into assets which exclude goodwill and identifiable intangibles, BVAEI, book value of goodwill, BGW, and book value of identifiable intangibles, BIDINT. The expanded version of equation (1) becomes:

$$MVE_{ft} = \chi_0 + \chi_1 BVAEI_{ft} + \chi_2 BVL_{ft} + \chi_3 BGW_{ft} + \chi_4 BIDINT_{ft} + \varepsilon_{ft} \quad (4)$$

Where
χ_0 = Intercept.

$BVAEI_{ft}$ = Book value of Assets excluding intangibles of firm f in year t.
BVL_{ft} = Book value of Liabilities of firm f in year t.
BGW_{ft} = Book value of goodwill of firm f in year t.
$BIDINT_{ft}$ = Book value of identifiable intangibles of firm f in year t.
ε_{ft} = error term.

4.2. Intangible write-offs and Equity Market Value

Another major purpose of the present study is to examine whether the market perceives goodwill and identifiable intangibles, in relation to their amortisation expense, as wasting resources when firms are valued. This focus leads to the asset and income-based model, which examines the association between market value of equity and write-offs of goodwill and identifiable intangibles. The development of the asset and income-based model involves three stages, which are presented and discussed in the three sub-sections below.

Goodwill write-off and Equity Market Value

The first stage of the development of the asset and income-based model relates equity market value to write-off goodwill. According to Ohlson (1993), the market value of company equity might be explained better by a model that includes a stock concept of value and a flow concept of earnings. McCarthy and Schneider (1995), based on previous research, suggested three variables, which could serve as a proxy for earnings. The first is the clean surplus which is defined as the change in the net book value of the firm from the beginning to the end of the fiscal year plus cash dividends less new equity raised (McCarthy and Schneider, 1995). The second is the net income. Finally, a third proxy is the abnormal or unexpected income which is defined as current earnings minus the risk-free rate, times the beginning of period book value, i.e., earnings minus charge for the use of capital (Ohlson, 1993). For the purpose of this study, the measure that will be used as a proxy for income is the operating profit after tax, PINC. According to the above arguments, equation (1) would be expanded as follows:

$$MVE_{ft} = BVA_{ft} + BVL_{ft} + PINC_{ft} \quad (5)$$

As stated earlier, a major focus in the present study is to examine the market perception of the amount reported for amortised goodwill. To do so, the operating profit after tax (the income measure), PINC, is to be separated into operating profit after tax before goodwill amortisation expense, PINCGWA, and goodwill amortisation expense, GWAT. The expanded version of equation (5) becomes:

$$MVE_{ft} = \alpha_0 + \alpha_4 BVA_{ft} + \alpha_2 BVL_{ft} + \alpha_5 PINCGWA_{ft} + \alpha_6 GWAT_{ft} + \varepsilon_{ft} \quad (6)$$

Identifiable Intangibles write-off and Equity Market Value

The second stage of the development of the asset and income-based model relates the equity market value to identifiable intangible write-offs. It examines the market perception of the amount reported for amortised identifiable intangibles. In order to do so, the income measure, PINC, is to be separated into operating profit after tax before identifiable intangible amortisation expense, PINCIDA, and identifiable intangible amortisation expense, IIAT. The expanded version of equation (5) becomes:

$$MVE_{ft} = \beta_0 + \beta_4 BVA_{ft} + \beta_2 BVL_{ft} + \beta_5 PINCIDA_{ft} + \beta_6 IIAT_{ft} + \varepsilon_{ft} \quad (7)$$

Goodwill and Identifiable Intangible write-offs and Equity Market Value

The third stage relates the equity market value to write-offs goodwill and identifiable intangibles. This is the final stage of the development of the asset and income-based model. It examines whether the market perceives write-offs goodwill and identifiable intangibles as wasting resources when valuing firms. To do so, the income measure, PINC, in equation (5) is to be separated into operating profit after tax before goodwill and identifiable intangible amortisation expense, PINCEI, goodwill amortisation expense, GWAT, and identifiable intangible amortisation expense, IIAT. The expanded version of equation (5) becomes:

$$MVE_{ft} = \chi_0 + \chi_5 BVA_{ft} + \chi_2 BVL_{ft} + \chi_6 PINCEI_{ft} + \chi_7 GWAT_{ft} + \chi_8 IIAT_{ft} + \varepsilon_{ft} \quad (8)$$

Where

χ_0 = Intercept.
BVA_{ft} = Book value of assets of firm f in year t.
BVA_{ft} = Book value of Assets of firm f in year t.
MVL_{ft} = Market value of Liabilities of firm f in year t.
$PINCAE_{ft}$ = Operating profit after tax before goodwill and identifiable intangibles amortisation of firm f in year t.
GWATft = Goodwill amortisation expense of firm f in year t.
$IIAT_{ft}$ = Identifiable intangible amortisation expense of firm f in year t.
ε_{ft} = error term.

5. Research Hypotheses

In the previous sections of this chapter, the research questions were addressed and the development of the models was discussed. This section focuses on the models and the expected coefficient values. The first two research questions addressed in the present study are: (1) whether the market perceives book assets goodwill and identifiable intangible as economic resources when valuing firms and (2) whether the market perceives book assets goodwill and identifiable intangibles similar to other tangible assets. To answer these questions, the following hypotheses are established:

Hypothesis 1: in the market-to-book value model, equation (4), the coefficient of goodwill (χ_3) is the coefficient of focus. If the goodwill coefficient is statistically significant and positively correlated with the firm's market value, then the market significantly perceives goodwill. To check this relationship the following null hypothesis is tested: **H1**: $\chi_3 = 0$

Hypothesis 2: if goodwill and firm's market value are highly correlated in the market-to-book value model, equation (4), then the question arises as to how the market perceives goodwill compared with all other assets. In other words, if the goodwill is a significant explanatory variable, is it weighted differently from all other assets when the firm is valued by the market? This is tested by assuming the following null hypothesis: **H2**: $\chi_3 = \chi_1$

Hypothesis 3: the coefficient of identifiable intangibles (χ_4) is also of interest to the present study. If (χ_4) is statistically significant and positively correlated with the firm's market value, then the market perceives the book value of identifiable intangibles as a significant factor in valuing the firm. To check this relationship the following null hypothesis is tested: **H3**: $\chi_4 = 0$

Hypothesis 4: if identifiable intangible assets and firm's market value are highly correlated, then how does the market perceives identifiable intangibles relative to all other assets. In other words, is there a difference in placing weight value between the treatment of identifiable intangibles and all other assets when the market values a company? This tested by assuming, in equation (4), the following null hypothesis: **H4**: $\chi_4 = \chi_1$

If goodwill and identifiable intangibles should be capitalised, then the issue with respect to the statement of financial performance is whether goodwill and identifiable intangibles should be amortised. Thus, the third research question addressed in the present study is whether the market perceives write-offs goodwill and identifiable intangibles as wasting resources when valuing firms. In order to answer this question, the following hypotheses are established:

Hypothesis 5: in the equation model (8) of the study, the coefficient of goodwill amortisation (χ_7) is the coefficient of focus. If (χ_7) is statistically significant and negatively correlated with the firm's market value, then the market significantly perceives goodwill amortisation as a relevant expense when valuing the firm. To check this relationship the following null hypothesis is tested, against the alternative ($\chi_7 < 0$) : **H5**: $\chi_7 \geq 0$

Hypothesis 6: in the specified model, equation (8), of the study, the coefficient of identifiable intangible amortisation (χ_8) is the coefficient of interest. If (χ_8) is statistically significant and negatively correlated with the firm's market value, then the market perceives identifiable intangibles amortisation as a relevant expense when valuing the firm. To check this relationship the following null hypothesis is tested, against the alternative ($\chi_8 < 0$): **H6**: $\chi_8 \geq 0$

6. Empirical Procedures

Multicollinearity and heteroscedasticity are the potential econometric problems associated with estimation procedure of the study models. The techniques used to deal with these limitations are discussed below.

Multicollinearity may arise from the existence of a highly correlated linear relationship among the explanatory variables of the regression models. For the study models, the simple correlation of book value of assets (BVA) and book value of liabilities (BVL) exceeds 0.995 and it is also supported by Spearman's *p*, which is significant at 1% for all cases. Thus, it is apparent that the presence of severe multicollinearity exists and could result in drawing misleading inferences for the sample t-statistic. To alleviate this concern, the study models are estimated in a net asset form. The study models are eliminated to replace the regression variables of BVA and BVL by one explanatory variable which is the book value of net assets (BVNA = BVA - BVL). Thus, the asset-based model can be written as follows:

$$MVE_{ft} = \chi_0 + \chi_9 BVNAEI\ (BVAEI - BVL)_{ft} + \chi_3 BGW_{ft} + \chi_4 BIDINT_{ft} + \varepsilon_{ft} \quad (9)$$

Where BVNAEI is the book value of net assets excluding goodwill and identifiable intangible assets and all other variables are as previously defined.

While the asset and income-based model can be written as follows:

$$MVE_{ft} = \chi_0 + \chi_5 BVNA(BVA - BVL)_{ft} + \chi_6 PINCEI_{ft} + \chi_7 GWAT_{ft} + \chi_8 IIAT_{ft} + \varepsilon_{ft} \quad (10)$$

Where BVNA is the book value of net assets and all other variables are as previously defined. However, evidence suggests that the net asset form of the study models have no significant problems of multicollinearity.

The other econometric problem when estimating the study models is heteroscedasticity. It assumes that the disturbances appearing in the equity regression function of the present study have different variances. Heteroscedasticity disturbances arise from the fact that large firms tend to produce large disturbances and small firms tend to produce small disturbances. For the study models, the null hypothesis that the variance of the residuals of the study models is consistent throughout the total sample is rejected at the 1% level of significance for all cases. Thus, it is apparent that the problem of heteroscedasticity is present and may lead to inconsistent estimates of standard errors and overstated t-statistics. To alleviate this concern, all regression estimates, t-statistics and p-values are reported on White's heteroscedasticity adjusted standards errors. White (1980) establishes a procedure, which is known as the heteroscedasticity-constant covariance matrix estimators (HCCME) to control for heteroscedasticity. White's procedure produces consistent estimates of the standard errors in the presence of heteroscedasticity.

7. Empirical Results

7.1. Market Perception of Book Values Goodwill and Identifiable Intangibles

This section presents the empirical results of the balance sheet issue as whether the market perceive goodwill and identifiable intangibles as economic resources in the determination of the firm's market valuation. It estimates the net asset-based model and discusses the regression results in the light of the research hypotheses.

The Asset-Based Model

Tables (5) and (6) present year-by-year regression summary statistics from estimating the reduced form of the asset-based model, equation (9). The results from the OLS estimation reveal that there is a significant relation between equity market values and assets book values. In particular, the estimated coefficients for BGW and BIDINT are positive and statistically significant in each of the four years.

The coefficient estimates for BVNAEI is positive and highly significant in each of the four year, as would be expected if these accounting measures represent underlying economic resources. Both the book asset goodwill (BGW) and other tangible depreciable assets (BVNAEI) are expected to generate cash flows in the future, and required to be amortised/depreciated over the expected duration of the related cash flow stream. However, it is argued that cash flows associated with tangible depreciable assets are more certain than those associated with goodwill. As a result, the book asset goodwill is more likely to represent the economic value of its underlying assets with error. Thus, it can be argued that the highly significant coefficient on BVNAEI across all years can provide evidence on the power of the present study model specifications to detect a positive relation between equity market values and economic resources that may be less difficult to measure than recorded goodwill. However, the adjusted R^2 values for the net asset model (share price three months after year-end) range from 0.632 (0.601) in 1998 to 0.833 (0.819) in 1997. The intercept term (χ_0) is positive and statistically insignificant in all of the four years.

Discussion of Hypothesis 1

The regression results of the net asset-based model reveal that the coefficient on BGW is consistently and significantly different from zero in their predicted directions. The slope coefficient of the book value of goodwill (χ_3), which is of interest to the present study, consistently and significantly has an absolute value of above 1 for the market value of equity at 1% level of significance. This result suggest that investors recognise the future cash flows associated with reported goodwill and they also highly price capitalised goodwill above its book value when determining firm market value. In addition, the estimated goodwill coefficient has the largest value compared to BVNAEI and BIDINT across the four year-by-year regressions. A possible explanation for this result is that the reported goodwill is correlated with an omitted variable such as the internally generated goodwill that is not recorded on the face of the statement of financial position. Another possible explanation could be the fact that the market value of purchased goodwill, on average, does not decrease in value and this is inconsistent with the standard, which requires amortisation. This will be explored further later. However, it could be argued that such an omitted variable could result in positive and statistically significant coefficients for goodwill even if the reported goodwill measure is not representing its underlying cash flows. This argument is consistent with those of Jennings et. al. (1996). al.(1996). As a result, these findings suggest that the market perceive the amount of reported goodwill as a positive and significant variable in determining the market value of the firm.

Discussion of Hypothesis 2

Given that reported goodwill is positive and statistically significant element in determining the value of a firm, the second hypothesis examines the magnitude of the market perception. In other words, it examines whether the market perceives book asset goodwill similar to other tangible book assets. This can not be done directly on the reduced form of the model so the net asset figure will be used as a surrogate. Thus, the hypothesis is tested by a statistical comparison between the coefficients of BGW and BVNAEI. The BVNAEI is the variable that represents the remaining assets in the net asset model. If the coefficients are significantly different, then the market perceives

reported goodwill differently from the other net assets. If the two coefficients are not statistically different, then this would suggest the market treats reported goodwill similar to other net assets.

Table (7) reports the summary statistics for the coefficient equality test. It reveals that the null hypothesis of equal coefficient can be rejected in all the four years under study at the conventional level of significance. Accordingly, it can be concluded that the market perceive reported goodwill different from other net assets. Note that this may be driven by either the asset or the liability or both components of net assets.

A point worth considering when interpreting the above findings is that the theoretical models of the present study uses the book values as a proxy for market values. The BVNAEI representing the remaining net assets that has some components where market value is equal to book value, such as cash and possibly accounts receivable, and some components where the market value may be greater than book value, such as stock and property, plant and equipment. However, the market value of goodwill is unknown. Based on the findings that the estimated coefficient value for asset goodwill is higher, and significantly different, than the coefficient value for other net assets in all four years under study, it can be concluded that the market perceive reported goodwill as having a higher multiple than other net assets.

Discussion of Hypothesis 3

An important feature of these results concerns χ_4, the slope coefficient for the asset identifiable intangibles. As expected, the coefficient on BIDINT (χ_4) is positive and significant, confirming that identifiable intangibles are valued by investors when they value firms. The year-by-year regression results observe a positive estimate coefficient for identifiable intangible assets, on average, of 0.7. A potential explanation for the positive, but not perfect, correlation between BIDINT and equity market values can be attributed to the different types of capitalised identifiable intangible assets. It was noted in Table (4) that reported identifiable intangibles comprise a combination of several intangible measures such as mastheads, licenses, rights and titles, brandnames, trademarks, R&D costs, intellectual property and others. There is an existing Australian evidence proved by Godfrey and Koh (2001) that capitalised R&D costs do not have any significant individual incremental power in explaining firm value, confirming that the value-relevance of R&D capitalisation may be greater for smaller firms. Given that the sample of the present study includes large firms, it can be argued that the inclusion of R&D costs with the other capitalised identifiable intangibles may result in a decrease in the weight of BIDINT in explaining the market value of the firm. This explanation is consistent with the hypothesis that capitalisation of different categories of intangible assets is associated with equity valuation.

The estimated coefficient for BIDINT is smaller than that for BGW across the four year-by-year regressions at the conventional level of significance. One possible explanation for this result is that either identifiable intangible assets are amortised "too slowly" (i.e., over a period that is higher than the expected duration of associated cash flows) or asset goodwill is amortised "too quickly". The slow amortisation for identifiable intangibles is most likely to be the cause for the small coefficient of BIDINT compared to BGW. It was argued that, in the absence of an accounting standard for identifiable intangibles, companies tend to charge less amortisation for identifiable intangibles in order to reduce the impact on reporting profit. Another possible explanation is that some intangible assets are recorded at valuation. If typically these valuations are optimistic in the view of investors, then this would also lead to a lower coefficient. However, this explanation is consistent with the hypothesis that the market perceives identifiable intangibles as economic resources.

Further, the coefficient estimate for BIDINT has increased from 0.295 in 1997 to 0.881 in 1998. Then it decreased to 0.669 in 1999 and increased to 0.812 in 2000. One possible explanation to the volatility of the coefficient values is the change in identifiable intangible amortisation over time. Evidence suggests that was a decrease in amortisation charge for identifiable intangibles in 1998. It then increased in 1999 and again decreased in 2000. This explanation is consistent with the hypothesis that the valuation coefficient on the book value of identifiable intangibles should increase over time to compensate for the accumulated amortisation.

Taken together the above related arguments, it can be concluded that the market perceives identifiable intangibles as positive and significant variables in the determination of market valuation. However, this can be attributed to the other types of capitalised identifiable intangible assets than R&D costs, at least for the sample of the present study.

Discussion of Hypothesis 4

Given that reported identifiable intangible assets are positive and statistically significant element in determining the value of a firm, the fourth hypothesis examines the magnitude of the market perception. How does the market in relation to all other tangible assets perceive reported identifiable intangibles? To do so, the hypothesis is tested by comparing the coefficients of BIDINT and BVNAEI. If the coefficients are significantly different, then the market perceives reported identifiable intangibles different from the other net assets. If the two coefficients are not significantly different, then this would assume that the market treats reported identifiable intangibles similar to other net assets.

Table (8) reports the summary statistics for the coefficient equality test. It shows that the null hypothesis of equal coefficient can be rejected in all the four years under study at 1% confidence level. Therefore, it can be concluded that the market perceives reported identifiable intangibles different that other net assets.

Based on the findings that the estimated coefficient value for identifiable intangibles is lower, and significantly different, than the coefficient value for other net assets in all four years under study, it can be concluded that the market perceive reported identifiable intangibles different in relation to all other net assets (assets excluding goodwill and identifiable intangibles less liabilities). In other words, the market discounts reported identifiable intangibles relative to other net assets when valuing firms, confirming the argument in the previous research hypothesis.

To summarise, in spite of the estimated coefficient value of identifiable intangibles relative to goodwill and other net assets coefficient values, all of the regression variable coefficients of the net assets model have the correct sign with respect to their theoretical values in each of the four years under study. In particular, the positive and statistically significant values of the estimate coefficients for BGW and BIDINT are consistent with the hypothesis that goodwill and identifiable intangibles are positive and significant elements in determining the market value of the firm.

7.2. Market Perception of Write-Offs Goodwill and Identifiable Intangibles

This section presents the empirical results as to whether the market perceives goodwill and identifiable intangibles as wasting resources in the determination of the firm's market valuation. It estimates the reduced form of the income-based model and discusses the regression results in the light of its research hypotheses.

The Asset and Income-Based Model

The reduced form of the asset and income-based model, equation (10), is estimated to examine the market perception of write-offs goodwill and identifiable intangibles. Tables (9) and (10) report the year-by year as well as the total sample regressions of OLS estimation. It reveals that the intercept term (χ_0) is consistently insignificant in each of the four years under study. The coefficient estimate for BVNA is positive in each of the four years, as expected, and statistically significant in three of the four years. This result suggests that the reduced form of the asset and income-based model may be misspecified. It can be argued that normally a firm is valued by the capitalisation of its income or cash flow stream or the net asset backing, if it is not generating adequate return. The combination of these is the reduced form of the asset and income-based model. In addition, the coefficient estimate for PINCEI is positive and highly significant in each of the four years under study. This is consistent with results reported in many other studies such as McCarthy and Schneider (1995) and Jennings et al (1996). The adjusted R^2 values for the reduced form of the income-based model (share price three months after year-end) range from 0.681 (0.641) in 1998 to 0.785 (0.805) in 1997.

Discussion of Hypothesis 5

In year-by-year regressions, the coefficient estimate for goodwill amortisation (GWAT) is negatively and significantly correlated with the market value of equity in all years under study at the conventional level of significance. The total sample regression results reveal that the coefficient estimate on goodwill amortisation is negative and highly significant on equity market values calculated at year-end and three months after year-end at 1% level of confidence. There are two possible explanations for the significance of goodwill amortisation on equity market values across all years as well as the total sample. First, goodwill amortisation is correlated with an omitted variable such as the expected future earnings that is not shown on the face of the financial statements. It could be argued that such an omitted variable could result in negative and statistically significant coefficient for goodwill amortisation even if the reported goodwill amortisation is not representing its underlying consumption. Second, the market views reported goodwill as an asset that is likely to generate future cash flows for a limited time and, therefore, it declines in value over time. Thus, it can be concluded that the market perceives goodwill amortisation as a wasting resource in the determination of firm's market valuation.

Discussion of Hypothesis 6

In year-by-year regressions in Tables (9) and (10), the coefficient estimate for identifiable intangible amortisation (IIAT) is negative and statistically insignificant on equity market value in all of the four years under study for both share price dates. The total sample regression results reveal that the estimated coefficient for identifiable intangible amortisation is negative and statistically significant on equity market value calculated at year-end and three months after year-end at 0.1 and 0.05 level of confidence respectively. One possible explanation for the insignificant estimate on IIAT in the year-by-year regressions is that a variable that is positively correlated with both identifiable intangible amortisation and equity market value was omitted from the regression model. For instance, BVNA and the remaining independent variables do not reflect the expected future cash flows associated with reported identifiable intangibles then IIAT might also serve as a proxy for these expected cash flows. A possible option to control for this effect is to include firm-specific intercepts in the regression model. This option is used by Jennings et al (1996) where the coefficient estimate for goodwill amortisation is positively correlated with the market value of equity in two of seven years under study. However, the case of the present study differs from Jennings case in the sense that the relation between identifiable intangible amortisation and equity market value is negative in all of the four years. According to Vincent (1994), it is argued that if the market consistently value goodwill or intangibles amortisation negatively, it is unlikely that such a result is due to firm-specific factors that cancel out in a large cross-sectional sample.

Under such circumstances, additional tests are conducted to control for this effect, when appropriate. The sample of the present study is cross-sectionally estimated based on economic sectors to allow for a separate intercept and slope coefficient for each economic sector. The estimation results reveal that the estimated coefficients for all variables have signs in their predicted directions and the intercept is significant in some of the economic sectors. In particular, identifiable intangibles are found statistically insignificant on equity market values in 6 out of 10 economic sectors. There are at least three possible explanations for this result. First, the market views reported identifiable intangibles as assets that maintain their values indefinitely and, therefore, the amortisation requirement is inappropriate. Second, managers select amortisation periods without regard for the economic substance of identifiable intangible assets in order to minimise the impact of amortisation charge on reported net income. Third, the valuation model is not sufficiently well-specified to detect the market valuation effects of amortisation for identifiable intangibles.

Although there is no consistent evidence of a significant association between identifiable intangible amortisation and equity market values in the year-by-year as well as economic sector regressions, there is evidence of such association after the estimation of the total sample of the present study. Therefore, it can be concluded that the market perceives identifiable intangibles as wasting resources in the determination of firm's market valuation, at least for the total firms of the present study (share price three months after year-end).

To summarise, in spite of the insignificant coefficient values for identifiable intangible amortisation, all of the variable coefficients in the regression model have the correct signs with respect to their theoretical values in each of the four years under study. In particular, the negative and statistically significant values of the estimate coefficients for GWAT and IIAT in the total sample regressions (share price three months after year-end) are consistent with the hypothesis that write-offs goodwill and identifiable intangibles are negative and significant elements in determining the market value of the firm.

8. Conclusion

The present study seeks to broaden the understanding of the controversy surrounding intangible assets by examining the market perception of goodwill and identifiable intangibles. In specific, the objective of the present study is to examine whether the capitalisation and amortisation of goodwill and identifiable intangible assets are value-relevant to investors in the determination of market valuation. It also investigates whether the market perceives the book assets goodwill and identifiable intangibles similar to other tangible assets. The empirical test analysis yielded several interesting results. *First*, the analysis reveals that reported goodwill and identifiable intangibles are positively and statistically significantly associated with equity market values, concluding that the market appears to perceive the book values of goodwill and identifiable intangibles as economic resources in the determination of market valuation of the companies. *Second*, the analysis reveals that reported goodwill and other net assets have the highest coefficient values among the variables of the asset-based model. Thus, it is concluded that, on average, the market perceives reported goodwill as having a higher weight than other financial position statement items in the asset-based model, whereas identifiable intangibles are most likely to be subjected to a discount by the market relative to other variables in the model when valuing firms. *Third*, there is evidence confirms the market perception of identifiable intangibles as non-wasting resources when valuing firms, suggesting that the relation between equity market values and write-offs of goodwill and identifiable intangibles may vary substantially across firms.

The market association test in the present study is able to substantiate the issues addressed over capitalisation of goodwill and identifiable intangibles in contemporary financial reporting research by providing evidence that capitalised goodwill and identifiable intangibles are important determinants of equity market value. These results are consistent with the overall findings by Godfrey and Koh (2001) which state that capitalised goodwill and identifiable intangibles excluding R&D costs are of value-relevance to investors in the determination of market valuation. The results are also consistent with other researchers such as McCarthy and Schneider (1995) and Jennings et al (1996) whose conclude that goodwill numbers are significant variables in the determination of market valuation. On the other hand, the market association test is also able to substantiate the issues addresses over amortisation of goodwill and identifiable intangibles by providing evidence suggests that the market may perceive goodwill and identifiable intangibles as economic resources that do not decline in values for some economic sectors. If the value of the goodwill and identifiable intangibles can be maintained indefinitely then the best representation of the firm's resources and performance may result from allowing firms to capitalise goodwill and identifiable intangibles and to review their balances annually and to determine whether they should be reduced in value. However, the findings of the present study also indicate that the relationship between the underlying goodwill and identifiable intangible assets and its accounting treatment may vary substantially from firm to firm. This suggests that the alternative of the "Capitalisation and Impairment Tests", allowing firms to capitalise and review balances annually, required by the US Financial Accounting Standard Board (SFAS 142) may have the potential to best represent the Australian market perception of goodwill and identifiable intangibles. In order to realise this potential, manager's incentives to financial reporting must be aligned with those of financial statements readers.

The present study also has a number of limitations. *First*, the sample of the present study consists of a number of the largest Australian listed firms that capitalise and amortise goodwill and identifiable intangible assets over the period from 1997 to 2000. All reported companies account for goodwill within the AASB 1013 "Accounting for Goodwill" which requires purchased goodwill to be capitalised and amortised over a maximum period of 20 years. In the absence of an accounting standard for identifiable intangibles, all reported companies account for identifiable intangibles based on management discretion, thus, its accounting involves subjectivity and they are subject to voluntary disclosure.

Second, there are two econometric potential limitations with the present study, which are: heteroscedasticity and multicollinearity. To alleviate heteroscedasticity, the t-statistic and p-value are obtained using White's heteroscedasticity adjusted standard error. To alleviate multicollinearity, the study models are estimated in the net form. Further, the evidence provided in the present study is based on theoretical models that are comprised of variables that are reported in the financial statements. For instance, statements of financial position purport to show purchased goodwill whereas equity values incorporate both purchased goodwill and internally developed goodwill. It is also possible that there are other untested predictor variables which may have the ability to substantiate the concerns expressed over the financial position and performance statements issues. Therefore, given these limitations, the results of the present study must be interpreted with caution.

Endnotes

1. Connect 4 database includes a collection that offers the complete annual reports of the top 500 Australian publicly companies whose listed on the Australian Stock Exchange (ASX).
2. Material percentage of intangibles is the case where intangibles constitute more than 5% of the total reported assets, pursuant to paragraph 5.1 of the Australian Accounting Standard Board 1013 "Materiality".

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Table (1): Summary of Tangible and Intangible Companies

Intangibles of Total Assets	**1997**			**1998**			**1999**			**2000**		
	No. of Firms	**%**	**%**	**No. of Firms**	**%**	**%**	**No. of Firms**	**%**	**%**	**No. of Firms**	**%**	**%**
Intangibles > 50%	13	6		12	5		16	6		23	8	
5% < Intangibles ≤ 50%	90	40		91	37		151	61		176	62	
Intangibles ≤ 5%	120	54		141	58		82	33		85	30	
Total Intangible	223		47	244		49	249		50	284		57
Companies	277		53	256		51	251		50	216		43
No Intangible Companies												
Total Companies	500		100	500		100	500		100	500		100

Table (2): Intangibles to Total Reported Assets for year-end 2000

(Number are in thousands AU$)

Company Name	**Total Assets**	**Intangible Assets**			**%**
		Goodwill	**Identifiable**	**Total**	
Primary Health Care Ltd	162,246	100,760		100,760	62
Seven Network Ltd	2,009,827		1,202,064	1,202,064	60
John Fairfax Holdings Ltd	2,152,743	25,707	1,251,158	1,276,865	59
PMP Communications Ltd	1,464,779	118,477	628,955	747,432	51
Vos Industries Ltd	3,682	1	1,846	1,847	50
Sunraysia Television Ltd	118,672		57,640	57,640	49
Ten Network Holdings Ltd	681,036		326,422	326,422	48
News Corporation Ltd	65,585,000	348,000	26,884,000	27,232,000	42
Solution 6 Holdings Ltd	357,140	76,844	70,727	147,571	41
Spotless Group Ltd	834,913	255,076	73,686	328,762	39
MYOB Ltd	89,623	2,609	31,617	34,226	38

Table (3): Intangibles in excess of 50% of Total Reported Assets for year-end 2000
(Numbers are in thousands AU$)

Company Name	Total Assets	Intangible Assets			%
		Goodwill	Identifiable	Total	
Hansen Technologies Ltd	88,968	71,675	987	72,662	82
Sausage Software Ltd	468,631	373,850	165	374,015	80
Hutchison Telecommunications	1,020,741		806,713	806,713	79
Keycorp Ltd	548,247	419,328	5,191	424,519	77
Sonic Healthcare Ltd	725,640	331,215	188,162	519,377	72
Canbet Ltd	17,680	11,776	582	12,358	70
Foundation Health Care Ltd	42,893	29,545		29,545	69
TAB Ltd	851,736	217,865	360,821	578,686	68
Investorweb Ltd	49,355	28,317	5,130	33,447	68
Southern Cross Broadcasting (Australia)	355,723	1,036	229,457	230,493	65
Rural Press Ltd	676,592		416,173	416,173	62
Harts Australasia Ltd	99,885	57,951	1,540	59,491	60
Telecasters Australia Ltd	90,249		50,713	50,713	56
Prime Television Ltd	503,743		269,183	269,183	53
Telemedia Networks International Ltd	83,107	44,142		44,142	53
Investor Group Ltd	49,322	25,880		25,880	52
Pracom Ltd	137,590	56,251	15,835	72,086	52

Table (4): The Existence of Goodwill and Identifiable Intangibles for year-end 2000
(Numbers are in thousands)

Company Name	Goodwill	%	Masthead & Tradename	Licences	Rights, Titles & Licences	Brand-names & Others	Trade-names	R&D	Intellectual Property	Total Identifiable	%
Southern Cross Broadcasting	1,036	0		229,457						229,457	65
John Fairfax Holdings Ltd	25,707	1	1,251,158							1,251,158	58
PMP Communications Ltd	118,477	8			584,215		44,740			628,955	43
GWA International Ltd	4,806	1				340,190				340,190	42
News Corporation Ltd	348,000	1			26,884,000					26,884,000	41
Casinos Australia Int. Ltd	4,206	4		38,979[a]						38,979	39
One.Tel Ltd	11,600	1		548,200[b]						548,200	38
TAB Queensland Ltd	800	1		45,002						45,002	36
MYOB Ltd	2,609	3					80	15,371	16,166	31,617	35
Burswood Ltd	15,673	2		261,579						261,579	31

[a] This figure consists of three items. Licences of $36,099, Operating Lease of $2,134, and Deferred Expense of $746.
[b] This figure consists of two items. Licences of $534,000 and Database & Distribution Networks of $14,200.

Table (5): The OLS Statistics for the Reduced Form of the Asset-Based Model based on White's Heteroscedasticity Adjusted Standard Errors (Share Price as year-end)

Year / Statistics / Predicted Sign		χ_0 ?	χ_9 +	χ_3 +	χ_4 +	Adj. R^2	N
1997	Beta-value	0.0493	1.8980	2.9490	0.2950	0.833	223
	t-statistic	0.4260	15.2050	2.9750	2.8540		
	p-value	0.7550	0.0000	0.0030	0.0040		
1998	Beta-value	0.1131	1.4920	3.1770	0.8810	0.632	237
	t-statistic	0.9310	7.8250	3.0210	4.2670		
	p-value	0.4010	0.0000	0.0030	0.0000		
1999	Beta-value	0.0175	1.7210	2.4400	0.6690	0.732	249
	t-statistic	0.8840	11.7450	2.8230	4.0410		
	p-value	0.3980	0.0000	0.0060	0.0000		
2000	Beta-value	0.3743	1.6890	2.5320	0.8120	0.702	284
	t-statistic	0.9950	10.1210	2.7120	5.0810		
	p-value	0.3350	0.0000	0.0070	0.0000		

Table (6): The OLS Statistics for the Reduced Form of the Asset-Based Model based on White's Heteroscedasticity Adjusted Standard Errors (Share Price three months after year-end)

Year / Statistics / Predicted Sign		χ_0 ?	χ_9 +	χ_3 +	χ_4 +	Adj. R^2	N
1997	Beta-value	0.0547	1.9080	2.6140	0.3540	0.819	223
	t-statistic	0.4020	14.8850	3.9150	3.1100		
	p-value	0.8260	0.0000	0.0000	0.0020		
1998	Beta-value	0.1317	1.4700	2.9330	0.7090	0.601	237
	t-statistic	0.9220	6.3340	2.5300	4.2350		
	p-value	0.3960	0.0000	0.0120	0.0000		
1999	Beta-value	0.0743	1.7510	2.8060	0.5860	0.760	249
	t-statistic	0.7580	12.0650	3.9990	4.7180		
	p-value	0.4110	0.0000	0.0000	0.0000		
2000	Beta-value	0.3180	1.7420	2.8950	0.7080	0.733	284
	t-statistic	0.6650	11.8140	2.8850	4.8530		
	p-value	0.4890	0.0000	0.0040	0.0000		

Model: $MVE_{ft} = \chi_0 + \chi_9 BVNAEI_{ft} + \chi_3 BGW_{ft} + \chi_4 BIDINT_{ft} + \varepsilon_{ft}$

$BVNAEI_{ft}$ = Book value of net assets excluding goodwill and identifiable intangible assets of firm f in year t. BGW_{ft} = Book value of goodwill of firm f in year t.

$BIDINT_{ft}$ = Book value of identifiable intangibles of firm f in year t.

ε_{ft} = Error term of firm f in year t.

Table (7): The Likelihood-ratio Chi-Square Test: Net Asset Model (Goodwill)

Year	Share price at year-end			Share price three months after year-end				
	Estimate Coefficients		CHISQ	p-value	Estimate Coefficients		CHISQ	p-value
	χ_9	χ_3				χ_9	χ_3		
1997	1.8980	2.9490	4.1150	0.0410	1.9080	2.6140	7.9150	0.0040
1998	1.4920	3.1770	7.8620	0.0040	1.4700	2.9330	8.7400	0.0030
1999	1.7210	2.4400	3.8190	0.0490	1.7510	2.8060	6.8330	0.0113
2000	1.6890	2.5320	5.5330	0.0140	1.7420	2.8950	6.1990	0.0195

Net Asset-Based Model: $MVE_{ft} = \chi_0 + \chi_9 BVNAEI_{ft} + \chi_3 BGW_{ft} + \chi_4 BIDINT_{ft} + \varepsilon_{ft}$

Test Statistics for Hypothesis: $\chi_9 = \chi_3$.

Table (8): The Likelihood-ratio Chi-Square Test: Net Asset Model (Identifiable Intangibles)

Year	Share price at year-end				Share price three months after year-end			
	Estimate Coefficients		CHISQ	p-value	Estimate Coefficients		CHISQ	p-value
	χ_9	χ_4			χ_9	χ_4		
1997	1.8980	0.2950	11.3370	0.0000	1.9080	0.3540	10.9330	0.0000
1998	1.4920	0.8810	10.9700	0.0000	1.4700	0.7090	10.3410	0.0000
1999	1.7210	0.6690	12.0600	0.0000	1.7510	0.5860	12.1100	0.0000
2000	1.6890	0.8120	11.0430	0.0000	1.7420	0.7080	10.0170	0.0000

Net Asset-Based Model: $MVE_{ft} = \chi_0 + \chi_9 BVNAEI_{ft} + \chi_3 BGW_{ft} + \chi_4 BIDINT_{ft} + \varepsilon_{ft}$

Test Statistics for Hypothesis: $\chi_5 = \chi_4$.

Table (9): The OLS Statistics for the Reduced Form of the Income-Based Model based on White's Heteroscedasticity Adjusted Standard Errors: (Share Price as year-end)

Year / Statistics / Predicted Sign		χ_0 ?	χ_5 +	χ_6 +	χ_7 –	χ_8 –	Adj. R^2	N
1997	Beta-value	0.0379	0.8330	9.7470	-33.8113	-0.0420	0.784	223
	t-statistic	0.0195	7.2250	6.7801	-2.2019	-1.2340		
	p-value	0.9930	0.0000	0.0000	0.0287	0.2065		
1998	Beta-value	0.1100	0.4319	12.7713	-36.8171	-0.0335	0.680	237
	t-statistic	0.5141	3.1910	7.7510	-2.2919	-0.7330		
	p-value	0.5903	0.0044	0.0000	0.0207	0.4011		
1999	Beta-value	0.0408	0.6911	11.2370	-35.5510	-0.0301	0.751	249
	t-statistic	0.3201	6.9961	7.4590	-2.5375	-0.8910		
	p-value	0.7891	0.0000	0.0000	0.0120	0.3383		
2000	Beta-value	0.0653	0.1220	17.5901	-31.4440	-0.0291	0.782	284
	t-statistic	0.1890	1.7870	16.1703	-2.3560	-0.9980		
	p-value	0.9010	0.0706	0.0000	0.0205	0.3870		
Total Sample Regression								
	Beta-value	0.1577	0.5395	12.8051	-35.8303	-0.0335	0.752	993
	t-statistic	0.6990	8.1145	14.9022	-5.1490	-1.8830		
	p-value	0.5171	0.0000	0.0000	0.0000	0.0630		

Model: $MVE_{ft} = \chi_0 + \chi_5 BVNA_{ft} + \chi_6 PINCEI_{ft} + \chi_7 GWAT_{ft} + \chi_8 IIAT_{ft} + \varepsilon_{ft}$
$BVNA_{ft}$ = Book value of net assets of firm f in year t.
$PINCEI_{ft}$ = Operating profit/loss after income tax excluding goodwill and identifiable intangibles amortisation expenses of firm f in year t.
$GWAT_{ft}$ = Goodwill amortisation expense of firm f in year t.
$IIAT_{ft}$ = Identifiable intangibles amortisation expense of firm f in year t.
ε_{ft} = Error term of firm f in year t.

Table (10): The OLS Statistics for the Reduced Form of the Income-Based Model based on White's Heteroscedasticity Adjusted Standard Errors: (Share Price three months after year-end)

Year / Statistics / Predicted Sign		χ_0 ?	χ_5 +	χ_6 +	χ_7 –	χ_8 –	Adj. R^2	N
1997	Beta-value	-0.1436	0.8110	10.2730	-34.0910	-0.0433	0.805	223
	t-statistic	-0.1587	8.7051	10.6900	-2.4439	-1.2013		
	p-value	0.9366	0.0000	0.0000	0.0205	0.1671		
1998	Beta-value	0.0360	0.3311	13.0444	-39.0212	-0.0363	0.643	237
	t-statistic	0.7470	2.1550	6.3092	-2.2710	-0.8770		
	p-value	0.5613	0.0395	0.0000	0.0255	0.4001		
1999	Beta-value	0.0235	0.6422	10.7810	-32.4151	-0.0311	0.770	249
	t-statistic	0.2231	5.8872	6.3940	-2.4855	-0.9260		
	p-value	0.7911	0.0000	0.0000	0.0115	0.3301		
2000	Beta-value	0.1606	0.0725	17.5010	-24.3721	-0.0281	0.806	284
	t-statistic	0.0205	1.1613	20.7540	-2.1981	-1.0010		
	p-value	0.9901	0.3110	0.0000	0.0305	0.3095		
Total Sample Regression								
	Beta-value	0.0901	0.4661	13.3915	-36.1708	-0.0401	0.755	993
	t-statistic	0.9971	7.4090	14.8611	-4.8070	-2.0999		
	p-value	0.3688	0.0000	0.0000	0.0000	0.0395		

Model: $MVE_{ft} = \chi_0 + \chi_5 BVNA_{ft} + \chi_6 PINCEI_{ft} + \chi_7 GWAT_{ft} + \chi_8 IIAT_{ft} + \varepsilon_{ft}$
$BVNA_{ft}$ = Book value of net assets of firm f in year t.
$PINCEI_{ft}$ = Operating profit/loss after income tax excluding goodwill and identifiable intangibles amortisation expenses of firm f in year t.
$GWAT_{ft}$ = Goodwill amortisation expense of firm f in year t.
$IIAT_{ft}$ = Identifiable intangibles amortisation expense of firm f in year t.
ε_{ft} = Error term of firm f in year t.

Notes